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10/706,360	11/12/2003	Barbara Liskov	279423	6805
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Kraguljac & Kalnay 4700 Rockside Road Summit One, Suite 510 Independence, OH 44131				
EXAMINER				
PHAN, TUANKHANH D				
ART UNIT		PAPER NUMBER		
2163				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/706,360

Applicant(s)

LISKOV ET AL.

Examiner

TUAN-KHANH PHAN

Art Unit

2163

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2 and 4-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The Amendment, filed on 1/2/2009, has been entered and acknowledged by the Examiner. Claims 1-2 and 4-23 are pending.

Response to Arguments

Applicant's arguments filed 1/2/2009 have been fully considered but they are not persuasive.

Issue I: Applicant argues that none of the references, alone and/or in combination, teach "providing in a **router a database** of bindings of client devices to network applications to replicas of a network application." Bindings of client devices to network applications to replicas of network applications occur within a database. The Office Action attempts to equate a web service with the database bindings. A web service is an application, not a database with bindings relating a client device, network application, and replica network application. Burbeck teaches the use of a peer-to-peer web service to facilitate file sharing.

Response I: The Examiner respectfully disagrees with the Applicant because Burbeck discloses binding one of the client nodes with a storage (col. 5, lines 45-49) for services that includes business applications with in a web service application (col. 6, lines 44-45) for one of ordinary skill in the art would appreciate that a database the Plus, Burbeck's disclosure of a peer-to-peer web services includes a router binding receiving request for binding (col. 9, lines 1-5) is equivalent to bindings relating a client

device with network application as claimed. Thus, Applicant's argument is not persuasive.

Issue II: Applicant argues that Burbeck does not disclose a database in a router and the bindings of client devices to network applications and their replicas.

Response II: The Examiner respectfully disagrees with the Applicant, for one of ordinary skill in the art would appreciate that a router inherently exists a routing table (database) to identify and provide connection to the request web service application (col. 9, lines 1-5; col. 25, lines 22-27). Therefore, Applicant's argument is not persuasive.

Issue III: Applicant argues that Burbeck acts as his own lexicographer in characterizing servlet as a router. As one of ordinary skill in the art would appreciate, a router as used in Applicant's claim refers to a network device used to route and forward information in a network between network devices. A servlet "router" is not equivalent to a router as claimed. The servlet "router" is a script that runs on a web server in order to provide content. The servlet router is not a device for routing and forwarding information as commonly understood in the art. Being a servlet, it would likely be physically impossible to provide a database in the "router" implemented as a servlet. The servlet would simply not have the resources to maintain a database.

Response III: The Examiner respectfully disagrees with the Applicant since Burbeck's router includes a routing database as pointed out above. In addition the combination of Burbeck and Srivastava references are functional because a service provider of Burbeck is functional equivalent to Srivastava's disclosures a plurality of

routers (abstract) that also allow client identifiers to be bind with server/router identifiers (replicas) (col. 4, ll. 59-63). Therefore, Applicant's argument is not persuasive.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 4-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burbeck et al. (US Pat. 7,143,139), hereinafter Burbeck, and further in view of Srivastava (US Pat. 7,047,315).

Regarding claims 1 and 21, Burbeck discloses a method comprising:

providing in a router a database of bindings of client devices (i.e. **binding or selecting a persistent node identifier and reputation information then assigning to each network participant so that the node identifier can be identified and connected to the associated database**, col. 4, ll. 60-67) to network applications to replicas of network applications, where the session includes a session state, a three way binding includes a binding expiration time (i.e. within a configurable time interval allowed, col. 3, line 25), and where the router is a first router of a plurality of routers associated with a network in which the network applications run (col. 9, ll. 1-5; data base and web-service associated with the storage, col. 5, ll. 45-55; col. 4, ll. 1-4);
maintaining a change log of records entered into the database, where a change log entry having a change event generated by the first router and an event number

sequential to an event number of a preceding change event in the change log (i.e. the gossip monger manages and stores reputation information as meta-data to update any change overtime include routing paths and events of each node and associated data, col. 11, ll. 15-26);

maintaining a current version vector associated with the database and the change log, the current version vector entry for the first router being a most recent event number from the change log (**the gossip monger manages and stores reputation information as meta-data to update any change overtime include routing paths and events of each node and associated data**, col. 11, ll. 15-26), the current version vector entry for each other router being a most recent event number received at the first router from that other router (col. 11, ll. 15-26); receiving an update of change events generated at another router in the plurality (i.e. **routing paths and events/interaction history of nodes having metadata-data includes current vector entry and refresh/update information gathered**, col. 11, lines 15-26); reconciling the current version vector according to the received update (col. 3, ll. 40-48); and reconciling the database according to the received update such that the client session is maintained (abstract); and

providing a consistent DNS binding to a set of related application connection requests from a client device, where the set of related application connection requests request access to a network application having multiple replicas in a distributed network environment, and where the set of requests are associated with a single session

established between the client device and a single replica of the network application (abstract).

While Burbeck concentrates heavily on peer-to-peer network with a router and server, the lack of plurality of servers could be combined. Srivastava discloses a plurality of routers (abstract) that also allow client identifiers to be bind with server/router identifiers (replicas) (col. 4, ll. 59-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the plurality of routers/replicas mapping taught by Srivastava into the above teachings of Burbeck in order to maintain a consistent flow of data and provide a fast-switched over a path to the intended replica so that network overhead and bandwidth usage are reduced (col. 6, ll. 50-55).

Regarding claim 2, the method of claim 1, Burbeck further discloses wherein the client device is identified by an Internet Protocol address, where a single replica of the network application is identified by an IP address, and where the network application is identified by a domain name system name (col. 1, ll. 38-56).

Regarding claim 4, Burbeck further discloses the method of claim 2 where the client identifier is associate with a dproxy Internet Protocol address (Figure 17A; col. 1, ll. 38-56).

Regarding claim 5, the method of claim 1, Burbeck further discloses wherein the step of reconciling the current version vector comprises the steps of: comparing a least recent event number of the router that generated the update to the event number in the current version vector entry, for that router (i.e. **updating and storing content**

traversal path definition as well as reputation information as appropriate, col. 23, ll. 30-55); if the least recent event number is in series with the event numbers in the database as determined by the current version vector entry for that other router, then entering the most recent event number of the received update into the current version vector **(the gossip monger manages and stores reputation information as meta-data to update any change overtime include routing paths and events of each node and associated data**, col. 11, ll. 15-26) entry for the router that generated the update of change events (col. 23, ll. 30-65); and if the least recent event number in the update is not in succession to the event number in the current version vector entry for the router that generated the update of change events, then discarding the received update (col. 23, ll. 30-65).

Regarding claim 6, the method of claim 5 Burbeck further discloses wherein the step of reconciling the database further comprises: if the update was not discarded in the step of reconciling the current version vector, then for each entry of the received update, a) determining whether the received entry has expired (col. 3, ll. 5-45); b) if the received entry has expired, then discarding the entry (col. 3, ll. 5-32); c) if the received entry has not expired, then comparing the request identifier of the received entry with the request identifier in the entries in the database (i.e. **encompassing the response to node's version of its reputation before the failure to satisfy the content request if the time interval expires**, col. 3, ll. 5-32); d) if a matching entry is not found for the received entry, adding the received entry to the database (col. 3, ll. 5-32); e) if a matching entry is found for the received entry, then comparing the application identifier

of the received entry with the application identifier of the matching entry (col. 3, ll. 5-32); f) if the application identifiers match, then retaining the entry having a later expiration time in the database (col. 30); and g) if the application identifiers do not match, then retaining an entry selected based on a deterministic function applied to a portion of each entry (abstract; col. 3, lines 5-52, col. 28).

Regarding claim 7, Burbeck further discloses the method of claim 6 wherein the step of retaining an entry based on a deterministic function comprises the steps of applying a function to the application identifiers (col. 23, ll. 30-65); and selecting an entry based on the outcome of the function (col. 23, ll. 30-65).

Regarding claim 8, the method of claim 6, Burbeck further discloses wherein the step of retaining an entry based on a deterministic function comprises the steps of applying the deterministic function to the request identifier (abstract, mapping applications of client to the server) and selecting an entry based on the outcome of the deterministic function (col. 23, lines 30-62).

Regarding claim 9, the method of claim 1, Burbeck further discloses comprising the step of deleting a binding from the database when the expiration time for the binding has been exceeded (col. 23, ll. 30-62).

Regarding claim 10, the method of claim 1 and Burbeck further discloses comprising the step of sending a request for an update of change events to another router in the plurality (col. 23, ll. 30-65); and the step of receiving the update further comprises receiving the update in response to the request (col. 23, ll. 30-65).

Regarding claim 11, the method of claim 1 and Srivastava further discloses further comprising the steps of: periodically generating a first router update of change events (col. 14, ll. 30-49, col. 31); and, transmitting the first router update of change events to at least one other router in the plurality (col. 14, lines 30-49; col. 31).

Regarding claim 12, the method of claim 1 and Srivastava further discloses comprising the steps of: affirming that an update has been received from each router of the plurality within a predetermined period for each router (col. 14, ll. 30-49; col. 31); if an update has not been received from a router within the predetermined period for that router, requesting an update of change events from that router (col. 14, lines 30-49; col. 31); and if an update is received in response to the request, reconciling the current version vector according to the received update (col. 14, lines 30-49; col. 31); and reconciling the database according to the received update (col. 14, lines 30-49; col. 31).

Regarding claim 13, the method of claim 5 and Srivastava further discloses wherein the step of reconciling the database further comprises the steps of: determining from the received update whether the database has a complete record of changes based on the current version vector (col. 14, lines 30-49; col. 31); if the database does not have a complete record of changes, requesting a replacement database from a router of the plurality of routers (col. 14, lines 30-49; col. 31).

Regarding claim 14, the method of claim 1, Srivastava further discloses, further comprising the step of transmitting a copy of the database and the current version vector to another router of the plurality of routers in response to a request from the other router (col. 14, lines 30-49; col. 31)

Regarding claim 15, see the discussion of claim 1 and Burbeck further discloses wherein the computerized device fails temporarily and recovers, the method further comprising the steps of: writing the first router change log to a persistent storage device (col. 23, ll. 30-60); sending an update of change events written to the change log in the persistent storage device to other routers in the network (col. 23, ll. 40-60); after recovering from failure, requesting a database and an associated version vector from one of the routers in the plurality (see discussion of claim 1); col. 31); retaining the received database and associated version vector (abstract); reconciling the received database with the change log from the persistent storage device (col. 13, ll. 25-45; col. ll. 30-49); and updating the received version vector (col. 13, ll. 25-45).

Regarding claim 16, the method of claim 1 and Burbeck discloses wherein the received update includes a version vector and the method of maintaining a current version vector further comprises the step of maintaining the current version vector in a version vector table including past version vectors (col. 13, ll. 25-45).

Regarding claim 17, Burbeck discloses the method of claim 16 further comprising the steps of: determining from the version vector table whether the database is current based on the version vector table (col. 13, lines 25-45; col. 23, ll. 40-60); and if the database is not current, then requesting missed change events from a second router in the network (col. 28, lines 1-10).

Regarding claim 18, Burbeck discloses the method of claim 17 wherein each router caches updates received from other routers in the plurality, the method further comprising the step of (abstract): if the router that generated the received update does

not respond to the request for missed change events, requesting the missed change events from a second router of the plurality and reconciling the change events into the database and current version vector. It is inherent that since record is periodically ingress update in the table and storage, any miss change of events will be updated entirely upon next update event (col. 23, ll. 40-60).

Regarding claim 19, the method of claim 1 and Burbeck discloses wherein the computerized device fails temporarily and recovers, wherein the step of maintaining a current version vector further comprises the steps of: creating an epoch timestamp from a clock of the computerized device to mark a recovery period (col. 12, ll. 5-20); entering a value pair to the current version vector for the first router, the value pair being an event number and the epoch timestamp (col. 12, ll. 5-35); and the method further comprising the step of after recovery, requesting a database copy and associated version vector from one of the other routers in the plurality (see discussion of claim 1).

Regarding claim 20, Burbeck further discloses the method of claim 19 further comprising the steps of: determining whether a pre-selected time period has passed (col. 3, 25-35); and deleting value pairs before a most recent value pair from the current version vector having timestamps created before the pre-selected time period (col. 11, ll. 15-40).

Regarding claim 22, Burbeck discloses the system of claim 21 wherein the network interface is configured to receive an update of change events for the database from another router in the plurality of routers in the network; and the controller is further

configured to reconcile the database according to the received update and to update the current version vector in response to reconciling the database (col. 11, ll. 15-40).

Regarding claim 23, Burbeck discloses the system of claim 21 wherein the controller is configured to transmit periodically, to at least one of the other routers in the plurality, an update of change events and the current version vector (col. 11, ll. 15-26).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **TUAN-KHANH PHAN** whose telephone number is (571)270-3047. The examiner can normally be reached on 4/5/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TKP
/Hung T Vy/
Primary Examiner, Art Unit 2163